

5 Claims 1-3, 6-16, and 19-27 have been rejected in the Office Action dated July 17 2002,
the Office action imposing a final rejection on all Claims.

Claims 1, 10, 14, and 27 have been amended by this Preliminary Amendment.

10 Claims 1-3, 6-16, and 19-27 are in the Application and reconsideration of the application
is hereby respectfully requested.

15 Claims 1-3, 6-16, and 19-27 in the parent Application were rejected under 35 U.S.C. 103
as being unpatentable over U.S. Patent 5,598,560 issued in the name of Benson in view of U.S.
Patent 5,933,641 issued in the name of Ma. Claims 1, 14, and 27, the independent Claims in the
Application have been amended to emphasize an important aspect of the invention. That aspect is
the ability of display the results of the original source file elements and the translation source file
elements side by side to insure that the translation is correct. Note in particular that elements has
a particular meaning. For example, page 9, lines 22-23 states "The source elements include
20 source instructions, comments, derivatives, and the like." What is not included is the results of
the computation. That is exactly what the Ma reference displays. The Ma reference displays the
results of performing a numeric computation. The reason is that the Ma reference seeks to
determine the best data format for displaying the results. This selection is most explicitly stated
in Claim 4 of the Ma reference wherein in claim element c.) through e.) states "the data format
25 provided by the enhanced numeric handler selected by the programmer; the data format changed
without effecting any physical data or program in the DSP; the data format can be selected from a
menu of a wide range of formats selected from the group consisting of single and double
precision, decimal and hexadecimal, and floating point and fixed point."

30 Note that the foregoing quotation emphasizes one of the feature of the Ma reference, that
feature is that the program is not changed, just the data format of the results. In fact the Ma
reference, as indicated by this quotation, teaches away from the present invention that is directed
toward not changing the data format (which is established in the source code) but in changing the
translation program in the sense of brining the translation program into conformity with the

5 source program. Because of this "teaching away", the rejection based on the Ma reference is traversed.

The Benson reference with which Examiner is combining the Ma reference is specifically directed to changing a program. Because the Ma reference specifically does not change the
10 program, only the presentation of the numeric results, the Ma reference teaches away from the Benson reference. Examiner is clearly combining these references based on the teaching of the present invention and not on the fact that two references combine to provide the result of the present invention. For this reason, rejection of Claims 1-3, 6-16, and 19-27, as amended, under 35 USC 103(a) as being unpatentable over Benson in view of Ma is respectfully traversed..

15

Furthermore, referring to the section of the Ma reference, i.e., column 5 lines 40-50, cited by Examiner, no reference is made to a comparison of the data by a side-by-side comparison or by aligning related data. Reference is made to a "viewing" of the user to numerical results , but this comparison is never described as being performed by aligning the results or by a side-by-side
20 comparison. Indeed, the viewing of the results is performed after separate computations. Furthermore, the viewing is not performed of the source and translation program results, but with the results of a plurality of numerical results. Because the viewing involves only the results numerical computation and the not the program elements which are the subject of the present invention, rejection of Claims 1-3, 6-16, and 19-27 under 35 USC 103(a) as being unpatentable
25 over Benson in view of Ma is respectfully traversed.

With respect to the Benson reference, the Benson reference includes an intermediate file. Thus, in the Benson reference the procedure is source files -> intermediate files -> translation files. This is clearly specified in the independent Claims 1, 9, and 14. (The remaining
30 independent claim, Claim 21, relates to reporting code errors and not to the code translation itself.) Reference to Fig. 2 of the instant Application that describes a code translation procedure does not reference an intermediate file. Therefore, the Benson reference includes a claim element that is not found in the present invention making the present invention patentable over the Benson

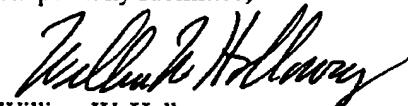
5 reference. Therefore, rejection of Claims 1-3, 6-16, and 19-27 under 35 U.S.C. 103(a) as being
unpatentable over Benson in view of Ma is respectfully traversed.

In view of the foregoing amendments and the foregoing discussion, it is believed that
Claims 1-3, 6-16, and 19-27 are now in condition for allowance and allowance of Claims 1-3, 6-
10 16, and 19-27 is hereby respectfully requested.

Should any matters remain incomplete that can be resolved by a telephonic interview,
Examiner is requested to call the undersigned attorney at 281-274 4064.

15

Respectfully submitted,



William W. Holloway
Attorney for Applicants
Reg. No. 26,182

20

Texas Instruments Incorporated
P.O. Box 655474, MS 3999
25 Dallas, TX 75265
(281) 274-4064

TI-28475

Page 8

APPENDIX

1. (Amended) A translation system for translating a source assembly language program for a source device into a translation assembly language program for a target device, the system comprising:

10 a front end for identifying source elements in the source program; and
a back end for generating the translation program having translation elements corresponding to translation of the identified source elements, the backend including a graphic user interface, the graphic user interface [for comparing] displaying the identified source elements aligned with the corresponding translation elements, [the interface] display processor
15 [receiving inputs] having an input unit, the input unit permitting a user to [for modifying] modify the translation elements based on comparison with the aligned source elements.

2. The system as recited in claim 1, wherein the source program is for a source device and the translation program is for a disparate target device.

20 3. The system as recited in claim 1, wherein the source program is a linear assembly file for a target device and the translation program is a scheduled assembly file for that device.

25 6. The system as recited in claim 1, wherein the translation is a context-dependent translation based on static analysis of the source program.

7. The system as recited in claim 1, wherein the back end further comprises:
a translator for performing a context-dependent translation, the translator comprising:
a translation machine description for mapping source opcodes to target opcodes;
30 a source machine description containing a description of source opcodes and source operands in a generic representation;
a target machine description containing a description of target opcodes and target operands in a generic representation; and
wherein the translator receives a source instruction from said front end, utilizes the
35 translation machine description and source machine description and target machine description to translate source elements into target elements.

5

8. The system as recited in claim 7, wherein the proper target opcode is chosen from a group of potential target opcodes by comparing the target opcode and target operand with the source opcode and source operand.

10 9. The system as recited in claim 7, wherein two or more source opcodes can be combined to a single target opcode when there is a target opcode that represents the two or more source code opcodes.

15 10. (Amended) The system as recited in claim 1 wherein the graphic user interface is a [graphic user interface] display processor.

11. The system as recited in claim 10, wherein the graphical user interface displays at least a portion of the source elements in a source window, at least a portion of the translation elements in a translation window, and the source and translation windows are displayed side-by-side.

20 12. The system as recited in claim 11, wherein corresponding groups of elements of the source and translation programs are aligned in the source and translation windows.

25 13. The system as recited in claim 11, wherein at least one of the source and translation windows is operable to display a status icon for an element in the window.

14. (Amended] A method for performing translation of an assembly language source program into an assembly language translation program, the method comprising:

30 receiving the source program;
identifying source elements in the source program;
generating the translation program having translation elements by performing a context-dependent translation of the source elements;
displaying the translation elements in [an] a graphic user interface for receiving user inputs, the graphic user interface aligning the source element and the translation element, the

5 aligned elements permitting a comparison of related source elements and translation elements;
and

 in response to user inputs, automatically regenerating selected translation elements based
on the [user inputs] comparison..

10 15. The method as recited in claim 14, wherein the source program is for a source
device and the translation program is for a disparate target device.

15 16. The method as recited in claim 14, wherein the source program is a linear
assembly program for a target device and the translation program is a scheduled assembly
program for the target device.

20 19. The method as recited in claim 14, further comprising:
 performing static analysis of the source elements in the source program; and
 performing context-dependent translation of the source elements based on the static
analysis.

20 20. The method as recited in claim 14, wherein the step of generating a translation
program further comprises:

25 converting an opcode of a source machine to an opcode of a translation machine program
by comparing the source opcode to possible translation opcodes;
 converting the operand of the source opcode by comparing an operand of the source
opcode in a generic expression with a generic expression for a translation operand;
 combining the translation opcode and the translation operand to form a translation.

30 21. The method as recited in claim 20, wherein the step of converting an opcode of
the source file further comprises choosing a translation opcode from a group of potential
translation opcodes by comparing the translation opcode and translation operand with the related
source opcode and source operand.

35 22. The method as recited in claim 20, wherein the step of converting the source
opcode further comprises the step of combining two or more source opcodes into a single

5 translation opcode when there is a translation opcode that represents the two or more source opcodes.

23. The method as recited in claim 14, wherein the user interface is a graphical user interface.

10

24. The method as recited in claim 23, further comprising:
displaying the source elements in a source window;
displaying the translation elements in a translation window; and
displaying the source and translation windows side-by-side in the graphical user
15 interface.

25. The method as recited in claim 24, further comprising aligning corresponding groups of elements of the source and translation program in the source and translation windows.

20

26. The method as recited in claim 24, further comprising displaying a status icon for an element in at least one of the source and translation windows.

27. (Amended) A translation system for translating a source program into a translation program, the system comprising:

25

a computer capable of executing a program,
an interactive program for translating code for a first processor into code for a second processor and capable of being executed on said computer, and

30

a graphics interface system displaying source program elements proximate corresponding translation program elements, the graphics interface system permitting the comparison of corresponding source program elements and translation program elements, the graphic interface unit having a user input device, the user input permitting correction of the translation program elements by a user based on the comparison.